U.S. Appln. No. 09/941,301
Amendment Dated March 21, 2005
Reply to Office Action of Dec. 21, 2004
Docket No. BOC9-2001-0022 (266)

REMARKS

These remarks are made in response to the Office Action of December 21, 2004 (Office Action). As this response is timely filed within the three-month statutory period, no fee is believed due.

In paragraphs 1-4 of the Office Action, the Examiner indicates that claims 1-19 and 21-43 are presently pending in the current application. As set forth in a telephone conference with the Examiner on September 15, 2004, Applicants withdrew claims 20 and 44 from the instant application because of a restriction requirement. Hence, claims 1-19 and 21-43 are presently pending in the current application, which is consistent with the remainder of the Office Action.

In paragraphs 6-7 of the Office Action, the Examiner has rejected claims 1-19 and 21- 43 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,600,814 to Carter, et al. (Carter).

Applicants have amended independent claims 1, 11, 19, 21, 25, 35, and 43 to clarify various disclosed aspects of the claimed invention. Applicants have also amended dependent claims 2-3, 5, 9-10, 12-13, 15, 22-24, 26-27, 29 33-34, 36-37, and 39 to maintain consistency with the newly amended independent claims.

More specifically, Applicants have amended claims 1 and 25 to clarify that the text input is pre-processed before being matched with entries of the TTS cache memory, as supported by page 7, lines 2-23, by FIG. 2, item 220, and throughout the specification. Applicants have amended claims 2 and 26 to clarify that the text-to-speech (TTS) cache entries can include an intermediate output which is not a digitally encoded audio file, as supported by page 8, lines 8-12, and throughout the specification. Claims 3 and 27 have been amended to specify that multiple text-to-speech engines can utilize the TTS cache, as supported by page 4, lines 25-27. Claims 9 and 10 have been amended to clarify that the claimed attributes are attributes for customizing spoken output, as supported by page 7, lines 2-11.

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Clams 11 and 35 have been amended in a fashion similar to claims 2 and 26 and are similarly supported. Clams 12 and 36 have been amended in a fashion similar to claims 1 and 25 and are similarly supported by page 7, lines 2-23 and by FIG. 2, item 220. Claims 13 and 37 have been amended in a fashion similar to claims 3 and 27. Claims 15 and 39 have been amended in a fashion similar to claims 5 and 29. Claims 19 and 43 have been amended in a fashion similar to claims 11 and 35 and have been amended to emphasize that the TTS cache memory can be directly and locally coupled to at least one T.S engine, as supported by FIG. 1, items 100, 110, and 120, by page 6, lines 18-26, and throughout the specification. Claim 21 has been amended in a fashion similar to claims 1 and 2. Claim 22 has been amended in a fashion similar to claim 9. Claim 23 has been amended in a fashion similar to claim 1. Claim 24 has been amended in a fashion similar to claim 3.

As each claim amendment is adequately supported by the specification, no new matter results from the claim amendments.

Before turning to the rejections of the art, a brief synopsis of the claimed invention may be helpful. The Applicants' disclosed and claimed invention pertains to a text-to-speech (TTS) cache that works in conjunction with a TTS system having one or more TTS engines (page 4, lines 25-27). If entries are found in the TTS cache that correspond to received text, stored spoken output can be utilized rather than requiring the TTS engine to construct spoken output.

More specifically, the TTS cache can store received or processed text input, and can store a variety of attributes as entries (page 6, lines 2-6) of the TTS cache. Before the TTS engine TTS converts received text, the text can be compared against the entries. When a match is found, output stored within the TTS cache corresponding to the matching entry can be retrieved. In one embodiment this output can be spoken audio. In another embodiment, this output can be intermediate data, which can be used by a TTS system to efficiently generate the spoken output (as noted by page 8, lines 8-12). Not

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storing speech containing audio files can be advantageous as intermediate data consumes substantially less memory space than audio file equivalents (audio files are relatively large files). Further, intermediate data can be further processed by a TTS engine to generate customized output (which may be faster, slower, higher pitched, etc. than the originally generated audio) as noted at page 7, lines 3-11.

Carter discloses a messaging system for email messages that includes a text-to-speech converter that text-to-speech converts the email messages so that the messages can be audibly presented via a telephone. The messaging system also includes a cache for storing previously converted speech signals. The cache permits speech signals of previous converted "text segments" to be played back, thus avoiding the need for the TTS converter to convert those "text segments" of the new e-mail message to speech.

Carter's teachings are directed towards TTS converting header data from email messages and storing the resulting audio in a memory cache of a telephone platform. Carter teaches that a maximum length (such as 40 or fewer characters) can be established and only those speech files associated with "text segments" below that maximum length are to be cached (column 4, lines 13-22). This preference for small "text segments" can be readily understood in light of the definition of "text segment" within Carter. As defined by Carter, a "text segment" is an e-mail message element, such as the "To:" segment 12, the "From:" segment 14, the "CC:" segment 16, the "RE:" segment 18, and the "Message:" segment, as shown in FIG. 1 and discussed at column 3, lines 34-49.

Carter's teachings are to place a cache 40 at a location outside the environment of the TTS converter 38, namely the cache 40 is to be placed inside a telephony platform 30. Consequently, an exact or identical match (column 4, lines 2-6) between a "text segment" and an entry in the cache 40 is required before the cache can be used. The architecture of Carter is intentional and necessary in order to be useful within the messaging system context explained at page 7, column 20-64.

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That is, Carter's teachings of a cache are to be combinable with a plurality of co-pending applications, details of which have been incorporated by reference in their entirety. Hence, the architecture of Carter MUST be compatible with the architecture of the universal messaging system described in the applications (incorporated by reference) that integrates a voice and fax messaging capability and provides an interface through which users can access the system via a telephone handset. To interoperate with the universal messaging system, the cache is located within a telephony platform (that is external from the e-mail storage 36 and text-to-speech converter 38).

Accordingly, the architecture of Carter, unlike that of the claimed invention, does not permit a close coupling between the TTS engine and the TTS cache. Such a limitation, while not significant to enable the teachings of Carter (as the from, to, cc, and subject fields will often be identical within various email messages) is substantial in terms of the Applicants' claimed invention. For example, Carter's architecture would be unsuitable for pre-processing text input before searching the cache. This pre-processing is necessary for the normalization of received text, as described at page 7, lines 12-22. In another example, Carter's architecture would be unsuitable for retrieving intermediate data from the TTS cache and would not be suitable for post-processing data retrieved from the TTS cache by a TTS engine, such as post-processing speech data to conform to the attributes described at page 7, lines 2-11. Carter's architecture would be unsuitable for incorporating attributes relating to the pronunciation of output with the TTS cache entries, as described at page 7, lines 2-11.

Turning to the rejections on the art, as noted above, independent Claims 1-19 and 21-43 were deemed by the Examiner to have been anticipated by Carter. Applicants respectfully maintain, however, that Carter does not expressly or inherently disclose the features of Applicants' invention. Specifically, in claims 1 and 25, Applicants claim the step of:

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> "a text-to-speech engine of the text-to-speech system processing said
> text input into processed input, said processed input comprising at least one
> of normalized text that represents a standardized version of the text input ·
> and an intermediate format used by the text-to-speech engine..."

where the processed input is matched against entries in a TTS cache.

Carter fails to expressly or inherently teach the pre-processing of received text by a text to speech engine, where a pre-processed text is compared against entries in a TTS cache. Instead, Carter teaches that "text segments" of e-mail messages must exactly match entries within a cache located within a telephony platform.

Referring to independent claims 11 and 25, the Applicants' teach the post-processing of output data from the TTS cache that does not comprise a digitally encoded audio file by a TTS engine to generate spoken output.

Carter fails to expressly or inherently teach this limitation. Carter teaches that digitally encoded audio containing speech is to be stored in a cache and associated with a "text segment." When the "text-segment" of e-mail messages exactly matches entries within a cache located within a telephony platform, the digitally encoded audio can be played over a telephone line and a TTS conversion of the text-segment (using TTS converter 38) is unnecessary.

Independent claims 19, 21, and 43 contain claimed limitations similar to those of claims 1 and 11 that were not expressly or inherently taught by Carter as explained above. Because each claimed limitation must be expressly or inherently taught within a cited reference for rejections to be properly asserted under 35 U.S.C. § 102(e), and since Carter fails to expressly or inherently include each limitation of the Applicants' amended independent claims, the rejections to claims 1-43 should be withdrawn, which action is respectfully requested.

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Even thought the present Application should now be in an allowable state, Applicants shall take to opportunity to bring differences between their claimed invention and that of Carter to the attention of the Examiner.

Referring to claim 2, Carter teaches that audio files containing spoken output are to be included in the cache 40 and provides no teachings or suggestions regarding the claimed intermediate output.

Referring to claim 3, Carter's teachings regarding the integrated fax and email elements (column 7, lines 57-64) are not related to multiple TTS engines utilizing the TTS cache. Applicants note that this arrangement of using multiple TTS engines permits a cluster of TTS engines to utilize a central cache. Carter fails to contemplate such an arrangement and the architecture shown within Carter and discussed for the referenced universal messaging system would not support such an arrangement.

Referring to claims 9 and 10, no equivalent to the attributes of the claims are present in Carter. The examiner interpreted attributes to be file attributes of text segments (such as length). The claimed attributes, however, refer to attributes for customizing speech output, which are not present in Carter.

Additionally, Applicants note that any modifications of Carter (such as modifications to combine Carter with Coker, Richard, Sarukkai, and/or Van Kommer) designed to integrate the cache 40 and the text-to-speech converter 38 and/or to permit the pre-processing or post-processing operations involving both the TTS engine and TTS cache, would change the principle operation of Carter (not permissible by MPEP 2143.01) from that shown in FIG. 1 and from the architecture specified by the co-pending applications that have been incorporated by reference in their entirety at column 7, lines 15-65. Further, such modifications would not be obvious to one of ordinary skill in the art, as the fundamental structure and principles of operation taught by Carter would have to be inventively modified. Further still, any such modifications would likely render Carter unsatisfactory for its intended purpose as a component of the universal messaging

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system (not permissible by MPEP 2143.01). Thus, Applicants do not believe Carter is a relevant prior art reference for purposes of the claimed application (as currently amended).

In summary, Applicants have amended claims and have shown how the claim amendments are supported by the specification. Applicants have also shown that Carter fails to explicitly or inherently teach each claimed limitation (especially that of pre-processing text before matching entries in a TTS cache or post-processing output received from the TTS cache) and have thereafter requested that the rejections to claims 1-19 and 21-43 be withdrawn.

The Applicants believe that the application in its present form is now in full condition for allowance, which action is respectfully requested. The Applicants request that the Examiner call the undersigned (direct line 954-759-8937) if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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